UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JOHN E. HOLLAND and CONNIE W. HOLLAND

Appeal 2007-2262
Application 09/860,423
Technology Center 2800

Decided: November 13, 2007

Before MURRIEL E. CRAWFORD, JENNIFER D. BAHR, and DAVID B. WALKER, *Administrative Patent Judges*.

BAHR, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

John E. Holland and Connie W. Holland (Appellants) appeal under 35 U.S.C. § 134 from the Examiner's decision rejecting claims 1-27, all of the pending claims. We have jurisdiction over this appeal under 35 U.S.C. § 6 (2002). This is the second appeal to this Board on this application. In the first appeal (Appeal 2005-0117), a panel[1] of this Board rendered a

[1] Judges McQuade and Nase have retired and have been replaced by Judge Crawford and Judge Walker.

decision (mailed March 29, 2005), hereinafter "Decision," affirming the Examiner's decision rejecting claims 1-27. The claims and rejections before us in this appeal are the same claims, with the exception of an amendment to claim 14 to correct a minor informality, and rejections that were before the prior panel in Appeal 2005-0117. Subsequent to the Decision in Appeal 2005-0117, Appellants filed a Declaration of John E. Holland (filed May 27, 2005) and Supplemental Declaration of John E. Holland (filed May 30, 2006) under 37 C.F.R. § 1.132.

THE INVENTION

Appellants' claimed invention is directed to "a protective cover for hoses and cables of the type that are periodically moved and dragged across abrasive surfaces such as concrete and asphalt, in environments such as airports and the like" (Spec. 1:5-7). Claim 1 is illustrative of the claimed subject matter and reads as follows:

> 1. A protective cover for cables or hoses used in environments in which the cables or hoses are subjected to abrasion, chemicals, or weather extremes, said protective cover comprising a sleeve surrounding said cable or hose, said sleeve having open ends and formed of a fabric made substantially of high performance yarns having a tensile modulus equal to or greater than 150 grams/denier and a tenacity equal to or greater than 7 grams/denier so that the protective cover is abrasion-resistant, cut-resistant, and tear-resistant.

THE EVIDENCE

The Examiner relies upon the following as evidence of obviousness:

Kite, III (Kite)	4,891,256	Jan. 2, 1990
Holt	5,070,597	Dec. 10, 1991
Andrieu	5,300,337	Apr. 5, 1994
Holland	5,395,682	Mar. 7, 1995

Appellants rely on the following as evidence of nonobviousness:

Declaration of John E. Holland (filed May 27, 2005).

Supplemental Declaration of John E. Holland (filed May 30, 2006).

THE REJECTIONS

The following rejections are before us for review.

Claims 1-9, 14-22, and 27 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the combined teachings of Andrieu and Holland.

Claims 10-12 and 23-25 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the combined teachings of Andrieu, Holland, and Kite.

Claims 13 and 26 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the combined teachings of Andrieu, Holland, and Holt.

The Examiner provides reasoning in support of the rejections in the Answer (mailed September 15, 2006). Appellants present opposing arguments in the Appeal Brief (filed July 28, 2006).

THE ISSUE

Appellants argue claims 1-9, 14-22, and 27, rejected as unpatentable over the combined teachings of Andrieu and Holland, as a group (Br. 9-16). Therefore, in accordance with 37 C.F.R. § 41.37(c)(1)(vii) (2007), we select claim 1 as the representative claim to decide the appeal of this rejection, with claims 2-9, 14-22, and 27 standing or falling therewith. Furthermore, Appellants rely solely on their argument against the rejection of claims 1-9, 14-22, and 27 for the patentability of the remaining claims on appeal (Br. 16). Consequently, we focus our attention on the rejection of claim 1, with the rejections of claims 10-12 and 23-25 as unpatentable over the combined teachings of Andrieu, Holland, and Kite, and claims 13 and 26 as unpatentable over the combined teachings of Andrieu, Holland, and Holt standing or falling with the rejection of claim 1. *See In re Nielson*, 816 F.2d 1567, 1572, 2 USPQ2d 1525, 1528 (Fed. Cir. 1987).

In rejecting claim 1 as unpatentable over the combination of Andrieu and Holland, the Examiner contends that it would have been obvious to modify Andrieu's protective cover, made of polyester fibers, so as to comprise Spectra® fibers, with the fabric parameters as taught by Holland (Ans. 8). The Examiner reasons that Holland teaches that such a commercially available fabric overcomes the disadvantages of polyester fabric covers (col. 2, ll. 16-23) and has minimal weight, increased abrasion resistance, tear strength, cut and stab resistance, and compatibility with the environment in which the cover is used (col. 1, ll. 5-10) (Ans. 8). The Examiner also points out that it has been held to be within the general level of skill of a worker in the art to select a commercially available or known material on the basis of its suitability for the intended use as a matter of

obvious design choice (Ans. 8). Appellants argue that (1) there is no teaching or suggestion in Andrieu of any reason that would suggest modification to use a yarn such as that taught by Holland and, in fact, the teachings of Andrieu provide disincentive for one of ordinary skill in the art to substitute Appellants' more expensive yarn material (Br. 9) and (2) the evidence of secondary considerations provided in the Holland Declaration rebuts the prima facie case of obviousness found by the Board in the Decision in Appeal 2005-0117 (Br. 13).

In light of the contentions of the Examiner and Appellants, the issue presented in this appeal is whether Appellants have demonstrated that the Examiner erred in rejecting claim 1 as unpatentable over the combination of Andrieu and Holland. This issue turns on whether, considering the totality of the evidence and argument presented by the Examiner and Appellants, the evidence of nonobviousness outweighs the evidence of obviousness.

THE FACTS

1. Andrieu discloses a wraparound sleeve for the protection of elongated articles, such as cables, wherein the sleeve is intended to provide protection from abrasion and heat and to maintain the articles in a neatly bundled arrangement so they are not damaged by moving machinery parts or the like (col. 1, ll. 14-20).
2. Andrieu's sleeve comprises monofilament warps 10 formed preferably of polyester (col. 3, ll. 8-10 and 44-48) interlaced with strands of bulky multifilament yarn 11 extending in the fill direction (col. 3, ll. 60-62). Nylon is especially preferred for the warps because

it is relatively inexpensive and sufficiently impervious to changes in temperature (col. 3, ll. 44-48).

3. The Examiner finds that Andrieu does not expressly disclose the protective cover being made of high performance yarns having a tensile modulus equal to or greater than 150 grams/denier and a tenacity equal to or greater than 7 grams/denier, wherein the protective cover is cut-resistant and tear-resistant (Ans. 6).
4. Holland discloses an improved fabric and a fabric cargo cover fabricated from yarns formed of long chain expanded polyethylene fibers, one source of such fibers being sold by Allied Signal under the trademark SPECTRA® (col. 2, ll. 25-30).
5. Holland describes the improved fabric as having "a high level of tear-resistance, abrasion resistance, cut-and-stab resistance, and chemical and cold resistance to improve the strength and durability of the fabric" (col. 2, ll. 34-37).
6. Holland touts the cargo cover made from the improved fabric as being more durable and lighter in weight than an analogous prior art cargo cover made from vinyl-coated nylon or polyester (col. 5, ll. 59-62).
7. Test results indicate an expected product life for a cargo cover made of Holland's improved fabric that is at least three times that for prior art covers made from vinyl-coated nylon (col. 5, l. 62 to col. 6, l. 2).
8. Holland teaches use of the improved fabric in applications where a lightweight, tear-resistant, abrasion-resistant, stab-and-cut resistant, chemical resistant, and cold resistant fabric is required (col. 6, ll. 7-9).
9. Yarns formed from long chain polyethylene fibers sold under the trade name SPECTRA® are "high performance" yarns having a tensile

modulus equal to or greater than 150 grams/denier and a tenacity equal to or greater than 7 grams/denier (Spec. 2:7-14). Moreover, fabrics woven or knitted from such yarns have a high level of tear resistance, abrasion resistance, and cut-and-stab resistance (Spec. 2:14-15).

10. Appellant John E. Holland is President of JHRG, LLC (JHRG), a small company with an average of 35 employees (Holland Decl. ¶¶ 1, 3).

11. JHRG offers an anti-chafe protective cover or sleeve formed of high performance yarns having a tensile modulus equal to or greater than 150 grams/denier and a tenacity equal to or greater than 7 grams/denier. These anti-chafe covers are for use on electrical cables, hoses, ropes, etc. and are particularly useful in environments in which the cables, etc. are subjected to abrasion, chemical exposure, salt water, or extreme weather conditions (Holland Decl. ¶ 4).

12. Gross sales attributable to the anti-chafe protective covers and sleeves have been over $380,000 since 2002, when they were first introduced (Holland Decl. ¶¶ 5-6). There is no indication in the record as to the market share that those gross sales represent.

13. Prior to introduction of the anti-chafe cover (Fact 11), protective covers for the same environments, including those made of a nylon polymer fabric of fibers sold under the trademark CORDURA® and of a ballistic-grade nylon, have been marketed. Such covers have been offered for sale at significantly lower prices than JHRG's anti-chafe covers (Holland Decl. ¶ 7, Suppl. Holland Decl. ¶ 5). There is

no evidence in the record as to whether the JHRG anti-chafe cover sales have cut into sales of these other available covers.

14. Fire hose, used by Titan Maritime, LLC (Titan) as an anti-chafe product on its umbilicals and hydraulic lines in the past (Holland Decl. Ex. C), also typically sells, at least in used condition, significantly cheaper than JHRG's anti-chafe cover (Suppl. Holland Decl. ¶ 5).

15. For the years 2002-2005, JHRG spent less than $50,000 promoting the anti-chafe covers and sleeves through trade shows, sales calls, and direct mail advertising; customers typically learn of the anti-chafe covers from "word-of-mouth" advertising (Holland Decl. ¶ 9). There is no evidence in the record showing the typical mode of advertising in this industry.

16. The Holland Declaration states that it took over two years (2002 and 2003) to convince potential customers that the anti-chafe covers and sleeves were worth the expenditure, because of the substantial price differential compared to other available alternatives (Holland Decl. ¶ 10), but does not state the basis for this conclusion. We infer from this statement that JHRG did not see appreciable sales during the first two years after the anti-chafe covers and sleeves were introduced.

17. JHRG's anti-chafe product has received numerous accolades (Holland Decl. ¶¶ 12-16, Ex. A-F). Our findings with respect to these accolades follow.

18. In the January 2003 issue of SAIL magazine, technical editor Freeman K. Pittman touted JHRG's anti-chafing product as very impressive compared to wrapping "tea towels and underwear around

[his] dock lines" (Holland Decl. Ex. A). Pittman's article states that he has been trying to wear out a piece of the product JHRG sent to him months earlier but has not made a dent in it and says of the product that "[i]t ain't cheap, but it sure works." *Id.*

19. In a press release dated January 23, 2003, Samson Rope Technologies (Samson) announced its selection as exclusive distributor of high-strength Chafe Gear from JHRG. The press release touts the chafe gear products as offering "significant advantages over other chafe gear materials currently on the market in terms of extending the durability of high-performance ropes, in-field installation and reduced weight." Holland Decl. Ex. B. Prior to introduction of JHRG's anti-chafe products, Samson purchased used fire hose, which is significantly less expensive than JHRG's product, as anti-chafing gear over critical portions of its cordage and rope products (Holland Decl. ¶ 13).
20. In a letter to JHRG in September 2002, Gage Parrot, Asset Manager at Titan, wrote that, prior to installation of JHRG's anti-chafe gear on its diver umbilicals and hydraulic pump and tooling hoses, Titan was seeing significant chafe on all hoses and umbilicals after one to two weeks of operation and that they have yet to replace one length of the JHRG chafe gear since its installation one month earlier (Holland Decl. Ex. C). The letter is not clear on what anti-chafe gear, if any, was used when significant chafe after one to two weeks was experienced. The letter also characterizes the JHRG gear as more expensive but superior to several different types of anti-chafe gear used in the past. *Id.* With the exception of the reference to fire hose,

the letter does not specify what those several different types of anti-chafe gear were.

21. Brad Gunn, Captain of the schooner Downeast Rover, attributes the success of the JHRG anti-chafe gear for his application to "[t]he grommets [added to permit him] to seize the gear to the lines, preventing migration from the critical area" (Holland Decl. Ex. D).

22. Mike Ring of McAllister Towing of Florida describes something (the record is not clear what) as "the best piece of chafe gear I've seen in 30 years in the business" (Holland Decl. ¶ 16, Ex. E). Exhibit E illustrates what appears to be a marine cable or rope covered with a protective sleeve. The protective sleeve appears to be somewhat frayed. While the caption of the photograph appears to indicate that the product described is some sort of chafe gear, presumably from JHRG, identified as "JHRG #SPAC-V-6x72′′," it is not clear from the record what that product comprises or whether it is even covered by any of the claims involved in this appeal. Accordingly, Exhibit E is of little probative value.

23. Exhibit F, attached to the Holland Declaration and discussed in Paragraph 16 therein, is a photograph of lobsterman Brent Wilson on a boat with one finger on a rope covered by a protective sleeve. The caption of the photograph states that, after testing "Supreme Protector Antichafe" for over a year, he assesses it as "Best I ever used." The record does not provide any details of the Supreme Protector Antichafe. Accordingly, we cannot determine whether the subject of Exhibit F is a protective cover as recited in any of Appellants' claims. Consequently, Exhibit F, like Exhibit E, is of little probative value.

24. JHRG has sold and continues to sell "the claimed protective covers" to the United States Government for use on 24 United States vessels (Holland Decl. ¶ 17). The Holland Declaration states that procurement by the United States Government is based not on advertising or marketing but, rather, on bona fide need coupled with evaluation of a product against existing products designed for the same purpose. *Id.* The statement that "[a]s evidenced from the list above, the United States Navy has accepted and purchased this product for use on, among other vessels, its destroyers and cruisers, because our anti-chafe product outperforms all other products on the market for similar purposes" (Holland Decl. ¶ 17) is unsupported by the record. Appellants have not provided any evidence as to the procurement standards applied or the dispositive factors considered in the decision of the United States Navy to select the anti-chafe products used on the United States vessels listed in Paragraph 17 of the Holland Declaration. Moreover, the record does not specify the structural details of the anti-chafe products used on the United States vessels. Accordingly, it cannot be determined whether their selection was made because of features recited in Appellants' claim 1 or whether other, unrecited features were critical to the selection decision.

25. The Supplemental Holland Declaration states that, despite wide difference in price between JHRG's anti-chafe cover and other protective covers used in similar applications, "JHRG's covers continue to sell based on degree of protection offered, their durability, and their light weight" (Supp. Holland Decl. ¶ 5).

26. The slick inner surface of a protective sleeve made from yarns of fibers sold under the trademark SPECTRA® results in minimal friction and minimal heat build up between the protective sleeve and mooring or docking lines, thereby reducing signs of abrasion, burn, or melt as compared with prior art coverings comprising polyester and nylon, which will melt or burn when the friction is great enough (Holland Decl. ¶ 18).
27. The relatively light weight of JHRG's covers compared with other conventional materials makes them ideal for divers' umbilical cords up to 200 feet long (Suppl. Holland Decl. ¶ 6).
28. The slick surface of covers made from fibers sold under the trademark SPECTRA® permits the covers to slide with movement of the umbilical cords, thus not hampering movement of the divers (Suppl. Holland Decl. ¶ 6).
29. Appellants disclose that a lamination 30, such as a thermoplastic film of polyethylene or ethylene vinyl acetate, is applied to the outer surface 22 of the sleeve and may also be applied to the inner surface 24 of the sleeve to further enhance fluid or particulate penetration resistance of the fabric (Spec. 5:24-31).

DISCUSSION

"Section 103 forbids issuance of a patent when 'the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.'" *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727,

1734, 82 USPQ2d 1385, 1391 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, (3) the level of ordinary skill in the art, and (4) where in evidence, so-called secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966). *See also KSR*, 127 S.Ct. at 1734, 82 USPQ2d at 1391 ("While the sequence of these questions might be reordered in any particular case, the [*Graham*] factors continue to define the inquiry that controls.")

As to the scope and content of the prior art, Andrieu discloses a protective sleeve for lengths of material such as cables, the sleeve comprising polyester and being intended to provide protection from abrasion and from damage from moving machinery parts and the like (Facts 1 and 2). Holland discloses an improved, lightweight fabric having a high level of tear-resistance, abrasion resistance, cut-and-stab resistance, and chemical and cold resistance for improved strength and durability, the fabric made from yarns available from Allied Signal under the trademark SPECTRA® (Facts 4-6).

As to the differences between the subject matter of claim 1 and the prior art, Andrieu does not expressly disclose the protective sleeve is made of high performance yarns having a tensile modulus equal to or greater than 150 grams/denier and a tenacity equal to or greater than 7 grams/denier, wherein the protective sleeve is cut-resistant and tear-resistant, as called for in claim 1 (Fact 3). Holland, on the other hand, discloses a fabric made of high performance yarns having a tensile modulus equal to or greater than 150 grams/denier and a tenacity equal to or greater than 7 grams/denier,

wherein the fabric is abrasion-resistant, cut-resistant and tear-resistant (Facts 4, 8, and 9), but Holland does not specifically disclose such fabric for use in a protective sleeve.

Modification of Andrieu's protective sleeve so as to comprise the improved fabric made from yarns available from Allied Signal under the trademark SPECTRA® taught by Holland, as proposed by the Examiner, would result in the subject matter of Appellants' claim 1. Accordingly, the dispositive issue in this appeal is whether the proposed modification would have been obvious to a person of ordinary skill in the art at the time of Appellants' invention.

Appellants' argument that there is no reason or suggestion in Andrieu of a modification to utilize a yarn such as that taught by Holland (Br. 9) is unsound. While there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness, "the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *KSR*, 127 S.Ct. at 1741, 82 USPQ2d at 1396. Andrieu's teaching that the protective sleeve is intended to provide protection from abrasion and heat and from damage from moving machinery parts and the like (Fact 1) would have prompted a person of ordinary skill in the art to seek a material that is abrasion-resistant and cut-and-stab resistant. Holland recommends its improved fabric for applications where a lightweight, tear-resistant, abrasion-resistant, stab-and-cut resistant, chemical resistant, and cold resistant fabric is required (Fact 8). Thus, while Holland discloses its improved fabric for use in making a fabric cargo cover (Fact 4) and not

specifically for use in making a protective cover for cables and the like, a person of ordinary skill in the art at the time of Appellants' invention would have recognized that Holland's improved fabric would improve similar devices, such as the protective sleeve of Andrieu, in the same way that it improves the fabric cargo cover, that is, by making it more durable and lighter in weight than a sleeve made from vinyl-coated nylon or polyester (Fact 6).

"A person of ordinary skill is also a person of ordinary creativity, not an automaton." *KSR*, 127 S.Ct. at 1742, 82 USPQ2d at 1397.

> When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.

Id., at 1740, 82 USPQ2d at 1396. The relevant inquiry is whether the improvement is more than the predictable use of prior art elements according to their established functions. *Id.*

Holland's disclosure of a fabric having a high level of tear-resistance, abrasion-resistance, cut-and-stab resistance, and chemical and cold resistance (Fact 5) would have prompted a person of ordinary skill in the art to use such a fabric for the protective sleeve of Andrieu, an application where a tear-resistant, abrasion-resistant, cut-and-stab resistant, chemical and cold resistant fabric is needed to protect cables and the like from damage

by moving machinery parts and the like (Facts 1, 2, and 8). Given Holland's teaching of test results pointing to an expectation of longer product life for a cargo cover made of such fabric as compared with prior art cargo covers made from vinyl-coated nylon (Fact 7), the combination of Holland's improved fabric with Andrieu's protective sleeve is nothing more than the predictable use of prior art elements according to their established functions.

Appellants' bald argument that the teachings of Andrieu would provide a substantial disincentive for one of ordinary skill in the art to substitute Appellants' significantly more expensive yarn material (Br. 9) is not supported by the reference. Specifically, while Andrieu refers favorably to polyester as a relatively inexpensive material, Andrieu gives no indication that any added expense for an improved fabric, such as the one disclosed by Holland, is intolerable or would involve an undesirable trade-off. The fact that a benefit, such as improved durability, comes at the expense of another benefit, such as cost savings, should not nullify its use as a basis to modify the disclosure of one reference with the teachings of another. "Instead, the benefits, both lost and gained, should be weighed against one another." *Winner Int'l Royalty Corp. v. Wang*, 202 F.3d 1340, 1349 n.8, 53 USPQ2d 1580, 1587 n.8 (Fed. Cir. 2000). As the Holland Declaration, with its Exhibits, illustrates (Facts 13, 14, 16, 18, 19, 20, and 24), considerations of durability and performance often outweigh cost considerations when selecting a product, particularly in the field of abrasion-resistant protection sleeves.

Appellants argue that the Holland Declaration and attached Exhibits show that the claimed anti-chafe product solves a long-felt need in the maritime industry that others failed to solve (Br. 10-11). In particular,

Appellants point to Paragraphs 12, 13, 14, and 16 of the Holland Declaration and Exhibits A, B, C, and E (Br. 12).

An argument based upon long-felt need must be accompanied by evidence that demonstrates the existence of a problem which was of concern in the industry and has remained unsolved over a long period of time. *See Vandenberg v. Dairy Equip. Co.*, 740 F.2d 1560, 1567, 224 USPQ 195, 199 (Fed. Cir. 1984). This can be accomplished, for example, by the testimony of experts in the industry, or publications and the like, which speak to the duration and extent of the problem, and of the substantial effort and resources which had been expended during that time in attempts to solve the problem. *See Railroad Dynamics, Inc. v. A. Stuki Co.*, 579 F. Supp. 353, 363, 218 USPQ 618, 628 (E.D. Pa. 1983), *aff'd* 727 F.2d 1506, 220 USPQ 929 (Fed. Cir. 1984). Once the long-felt need has been established, it must further be shown that the invention satisfied that need. *See In re Cavanagh*, 436 F.2d 491, 496, 168 USPQ 466, 471 (CCPA 1971). This can be demonstrated, for example, by evidence establishing commercial success and that the industry purchased the claimed invention because it satisfied the long-felt need. *See W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1555, 220 USPQ 303, 315 (Fed. Cir. 1983).

Exhibit A, referred to in Paragraph 12 of the Holland Declaration, merely evidences an opinion by a technical editor of SAIL magazine that JHRG's anti-chafing product compares very impressively with "tea towels and underwear [wrapped] around [his] dock lines" (Fact 18). The wrapping of tea towels and underwear around dock lines does not strike us as expenditure of substantial effort and resources to solve a problem. Moreover, Exhibit A does not speak to the duration and extent of the

problem alleged to be solved by the JHRG anti-chafing product discussed therein.

Exhibit B and Paragraph 13 of the Holland Declaration merely evidence a business relationship between JHRG and Samson, with Samson being selected as exclusive distributor of high-strength Chafe Gear from JHRG (Fact 19). The described utilization of used fire hose, a product typically available for significantly lower cost than the JHRG product (Fact 19), as an anti-chafe product hardly amounts to expenditure of substantial effort and resources to solve the problem of chafing of cordage and rope products. Neither Exhibit B nor Paragraph 13 speaks specifically to the duration and extent of the problem. While Exhibit B, a press release by Samson, touts the JHRG chafe gear products as offering significant advantages over other chafe products on the market (Fact 19), there is no indication that this is anything more than self-serving promotion of products that Samson has entered into a business relationship to distribute.

Exhibit C and Paragraph 14 of the Holland Declaration refer broadly to several different types of anti-chafe gear, used by Titan on its diver umbilicals and hydraulic pump and tooling hoses prior to using JHRG chafe gear, that Titan judged to be inferior to the JHRG gear, but they do not specify what those several different types of anti-chafe gear were (Fact 20). Further, neither speaks to the duration and extent of the problem of chafing of umbilicals and hoses or unsuccessful expenditures of effort and resources by others to solve the problem.

Exhibit E and Paragraph 16 of the Holland Declaration merely quote Mike Ring of McAllister Towing of Florida as describing some sort of chafe gear, presumably from JHRG, identified as "JHRG #SPAC-V-6x72´´," as

"the best piece of chafe gear I've seen in 30 years in the business" (Fact 22). Neither gives any indication that a persistent problem remained unsolved for 30 years, much less speaks to expenditures of efforts and resources by others to solve such a problem. Moreover, neither Exhibit E nor Paragraph 16 of the Holland Declaration clearly establishes what product is described in Exhibit E or whether it is even covered by claim 1, thereby severely limiting the probative value of Exhibit E (Fact 22). Exhibit F, also mentioned in Paragraph 16 of the Holland Declaration, is likewise of limited probative value for the same reason (Fact 23).

For the above reasons, the Holland Declaration and its Exhibits relied on by Appellants to establish Appellants' claimed invention satisfies a long-felt, unsolved need, fall short of doing so.

Appellants also argue Appellants' claimed invention produces unexpected results in the market (Br. 11-12). Specifically, Appellants argue that the two years it took for potential customers to appreciate the results/benefits they would see from the substantially more expensive product of JHRG (Fact 16) was an unexpected result (Br. 12). That it took JHRG two years to see any appreciable gross sales of the anti-chafe product should not have been unexpected given the manner of marketing (Fact 15). The two-year delay may simply be explained by the fact that customers typically learned of the anti-chafe covers by "word-of-mouth" advertising (Fact 15). Moreover, while the substantial improvements in durability and service life should not have been unexpected to one of ordinary skill in the art, in light of the teachings by Holland of the benefits of the improved fabric (Facts 5-7), the reluctance of consumers, at least initially, to purchase

a new product that is considerably more expensive than other available products (Facts 13 and 14) likewise is not terribly surprising.

The other unexpected result cited by Appellants (Br. 12) is that the relatively slick inner surface of JHRG's anti-chafe protective cover combined with the high tensile strength of the fabric itself results in minimal friction and minimal heat buildup (Fact 26). As Appellants have not specified all structural details of the JHRG anti-chafe cover alluded to, the Holland Declaration is insufficient to establish that the characteristic of minimal friction and heat buildup is the result of the features recited in Appellants' claim 1, rather than other, unrecited features, such as a lamination 30 applied to the inner surface of the sleeve (Fact 29) or grommets (Fact 21). Accordingly, the Holland Declaration does not adequately establish that the evidence of unexpected results is commensurate with the scope of claim 1. Moreover, it is not even clear that a slick surface would be an unexpected characteristic of a fabric made from fibers sold under the trademark SPECTRA® as taught by Holland or whether the slick characteristic of the fibers (Facts 26, 28) is what gives the fabric its abrasion-resistance.

The relative light weight of JHRG's covers (Fact 27) likewise is not an unexpected advantage of covers made of fabric comprising fibers being sold by Allied Signal under the trademark SPECTRA®. Holland points out this advantage of such an improved fabric (Fact 6).

Finally, Appellants argue that the Holland Declaration evidences commercial success of the JHRG anti-chafe product (Br. 12-13). JHRG's gross sales of over $380,000 attributable to the anti-chafe covers and sleeves since their introduction in 2002 (Fact 12), without evidence as to whether

this represents a substantial share of any definable market, provides a very weak showing of commercial success, if any. *See In re Huang*, 100 F.3d 135, 140, 40 USPQ2d 1685, 1689 (Fed. Cir. 1996).

JHRG's evidence of sales of their anti-chafe product to the United States Government for use in United States vessels (Fact 24) likewise is insufficient, by itself, to indicate commercial success. Appellants have provided no evidence to establish what share of the government procurement of anti-chafe gear this represents or how many other suppliers of alternative products for the same or similar use have opted to participate in this procurement process, and what factors led to the selection of JHRG as a supplier.

Even assuming Appellants had sufficiently demonstrated commercial success, that success is relevant in the obviousness context only if it is established that the sales were a direct result of the unique characteristics of the claimed invention, as opposed to other economic and commercial factors unrelated to the quality of the claimed subject matter. *Id.* In other words, a nexus is required between the sales and the merits of the claimed invention. Appellants have not established that any commercial success of JHRG's anti-chafe products was directly attributable to characteristics of the *claimed* invention, rather than other, unrecited features, such as grommets, which were identified by at least one consumer as the key to the success of the JHRG anti-chafe gear for his application (Fact 21). Additionally, while the Holland Declaration states that JHRG spent less than $50,000 promoting the anti-chafe gear through trade shows, sales calls, and direct mailings (Fact 15), there is no evidence in the record to establish how this compares with the advertising norms of the industry at that time or whether this was a

significant expenditure for a company of only 35 employees (Fact 10). Likewise, the more than two years it took for JHRG to convince potential customers that the anti-chafe covers and sleeves were worth the expenditure (Fact 16) may speak more to the manner of advertising, in which customers typically learn of the anti-chafe covers by "word-of-mouth" (Fact 15), than it does to attributes of the product itself or the unexpected benefits thereof. As for the sale of JHRG's anti-chafe gear to the United States Government for use on United States vessels, Appellants have not supplied sufficient evidence to permit us to ascertain whether these sales were attributable to the unique characteristics of the claimed invention, rather than other factors, such as characteristics of JHRG as a vendor, for example.

After reviewing all of the evidence before us, including the totality of Appellants' evidence, it is our conclusion that, on balance, the evidence of nonobviousness fails to outweigh the evidence of obviousness discussed above and, accordingly, the subject matter of claim 1 would have been obvious to one of ordinary skill in the art within the meaning of 35 U.S.C. § 103 at the time Appellants' invention was made. *See Richardson-Vicks Inc. v. Upjohn Co.*, 122 F.3d 1476, 1483, 44 USPQ2d 1181, 1187 (Fed. Cir. 1997). We therefore sustain the rejection of claim 1, as well as claims 2-9, 14-22, and 27 standing or falling therewith, as unpatentable over the combined teachings of Andrieu and Holland. We likewise sustain the rejections of claims 10-12 and 23-25 as unpatentable over the combined teachings of Andrieu, Holland, and Kite, and claims 13 and 26 as unpatentable over the combined teachings of Andrieu, Holland, and Holt, which Appellants have not argued separately from the rejection of claim 1 as unpatentable over the combined teachings of Andrieu and Holland.

SUMMARY

The decision of the Examiner to reject claims 1-27 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv) (2007).

AFFIRMED

vsh

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